

CLAIMS:

1. An apparatus for adjusting a tonal quality of an audio signal, comprising:

a first audio filter operable to produce a first intermediate signal containing a band of frequencies at a lower mid-range of the audio signal;

a second audio filter operable to produce a second intermediate signal containing a band of frequencies at an upper mid-range of the audio signal;

a mixing circuit operable to combine the first intermediate signal, the second intermediate signal and the audio signal to produce a tonally adjusted version of the audio signal; and

a user adjustable control operable to adjust respective gains of the first and second intermediate signals to affect the tonal quality of the audio signal without substantially altering the tonal quality of the audio signal at frequencies between the lower mid-range and the upper mid-range.

2. The apparatus of claim 1, wherein the user adjustable control is a single potentiometer operable to sweep from a first extreme position to a second extreme position in order to adjust the respective gains of the first and second intermediate signals.

3. The apparatus of claim 2, wherein the adjustment of the single potentiometer effects an adjustment in either of the respective gains of the first and second intermediate signals without adjusting the other of the respective gains of the first and second intermediate signals.

4. The apparatus of claim 1, wherein at least one of the mixing circuit and the user adjustable control is operable to adjust either of the respective gains of the first and second intermediate signals without adjusting the other of the respective gains of the first and second intermediate signals.

5. The apparatus of claim 1, wherein at least one of:
the tonally adjusted audio signal is characterized at least in part by frequency spectral energy of the audio signal being reduced by frequency spectral energy of the first intermediate signal as a function of the adjusted gain of the first intermediate signal; and

the tonally adjusted audio signal is characterized at least in part by frequency spectral energy of the audio signal being increased by frequency spectral energy of the second intermediate signal as a function of the adjusted gain of the second intermediate signal.

6. The apparatus of claim 1, wherein the lower mid-range band of frequencies is one of: (i) between about 150 to 600 Hz; (ii) between about 200 to 500 Hz; (iii) between about 200 to 350 Hz; and (iv) about 250 Hz.

7. The apparatus of claim 1, wherein the upper mid-range band of frequencies is one of: (i) between about 2750 to 6000 Hz; (ii) between about 3000 to 6000 Hz; (iii) between about 3000 to 5000 Hz; (iv) between about 4000 to 5000 Hz; and (v) about 4000 Hz.

8. An apparatus for adjusting a tonal quality of an audio signal, comprising:

an amplifier circuit operable to receive the audio signal and to produce a tonally adjusted version of the audio signal;

a first audio filter disposed in a forward path between the audio signal and the amplifier circuit and operable to produce a feed forward signal containing a band of frequencies at a lower mid-range of the audio signal;

a second audio filter disposed in a feedback path around the amplifier circuit and operable to produce a feedback signal containing a band of frequencies at an upper mid-range of the audio signal; and

a user adjustable control operable to adjust respective gains of the feed forward and feedback signals to affect the tonal quality of the audio signal without substantially altering the tonal quality of the audio signal at frequencies between the lower mid-range and the upper mid-range.

9. The apparatus of claim 8, wherein:

the user adjustable control is a single potentiometer operable to sweep from a first extreme position associated with a first input terminal to a second extreme position associated with a second input terminal through a variable intermediate position associated with an output terminal;

the feed forward signal is coupled to the first input terminal of the potentiometer, the feedback signal is coupled to the second input terminal of the potentiometer, and the output terminal of the potentiometer is coupled to an input of the amplifier circuit; and

user actuation of the potentiometer effects adjustment of the respective gains of the feed forward and feedback signals in order to affect the tonal quality of the audio signal.

10. The apparatus of claim 9, wherein the single potentiometer is operable to effect adjustments in either of the respective gains of the first and second intermediate signals without adjusting the other of the respective gains of the first and second intermediate signals.

11. The apparatus of claim 10, wherein the single potentiometer includes a fixed intermediate position associated with a third input terminal and the third input terminal is coupled to a null potential such that: (i) variable intermediate positions between the fixed intermediate position and the first extreme position permits adjustment of the first intermediate signal without permitting adjustment of the second intermediate signal; and (ii) variable intermediate positions between the fixed intermediate position and the second extreme position permits adjustment of the second intermediate signal without permitting adjustment of the first intermediate signal.

12. The apparatus of claim 8, wherein at least one of:
the first audio filter is a bandpass filter having a center frequency one of: (i) between about 150 to 600 Hz; (ii) between about 200 to 500 Hz; (iii) between about 200 to 350 Hz; and (iv) about 250 Hz; and

the second audio filter is a bandpass filter having a center frequency one of: (i) between about 2750 to 6000 Hz; (ii) between about 3000 to 6000 Hz; (iii) between about 3000 to

5000 Hz; (iv) between about 4000 to 5000 Hz; and (v) about 4000 Hz.

13. An apparatus for adjusting a tonal quality of an audio signal, comprising:

a first audio filter operable to produce a first intermediate signal containing a band of frequencies at a lower mid-range of the audio signal;

a second audio filter operable to produce a second intermediate signal containing a band of frequencies at an upper mid-range of the audio signal;

a mixing circuit operable to combine the first intermediate signal, the second intermediate signal and the audio signal to produce a tonally adjusted version of the audio signal; and

a user adjustable control operable to adjust either of the respective gains of the first and second intermediate signals without adjusting the other of the respective gains of the first and second intermediate signals to affect the tonal quality of the audio signal.

14. An apparatus for adjusting a tonal quality of an audio signal, comprising:

means for producing a first intermediate signal containing a band of frequencies at a lower mid-range of the audio signal;

means for producing a second intermediate signal containing a band of frequencies at an upper mid-range of the audio signal;

means for combining the first intermediate signal, the second intermediate signal and the audio signal to produce a tonally adjusted version of the audio signal; and

means for adjusting respective gains of the first and second intermediate signals to affect the tonal quality of the audio signal without substantially altering the tonal quality of the audio signal at frequencies between the lower mid-range and the upper mid-range.

15. A method of adjusting a tonal quality of an audio signal, comprising:

producing a first intermediate signal containing a band of frequencies at a lower mid-range of the audio signal;

producing a second intermediate signal containing a band of frequencies at an upper mid-range of the audio signal;

combining the first intermediate signal, the second intermediate signal and the audio signal to produce a tonally adjusted version of the audio signal; and

adjusting respective gains of the first and second intermediate signals to affect the tonal quality of the audio signal without substantially altering the tonal quality of the audio signal at frequencies between the lower mid-range and the upper mid-range.

16. The method of claim 15, further comprising: adjusting either of the respective gains of the first and second intermediate signals without adjusting the other of the respective gains of the first and second intermediate signals.

17. The method of claim 15, wherein at least one of:

the tonally adjusted audio signal is characterized at least in part by frequency spectral energy of the audio signal being reduced by frequency spectral energy of the first intermediate

signal as a function of the adjusted gain of the first intermediate signal; and

the tonally adjusted audio signal is characterized at least in part by frequency spectral energy of the audio signal being increased by frequency spectral energy of the second intermediate signal as a function of the adjusted gain of the second intermediate signal.

18. The method of claim 15, wherein the lower mid-range band of frequencies is one of: (i) between about 150 to 600 Hz; (ii) between about 200 to 500 Hz; (iii) between about 200 to 350 Hz; and (iv) about 250 Hz.

19. The method of claim 15, wherein the upper mid-range band of frequencies is one of: (i) between about 2750 to 6000 Hz; (ii) between about 3000 to 6000 Hz; (iii) between about 3000 to 5000 Hz; (iv) between about 4000 to 5000 Hz; and (v) about 4000 Hz.

20. The method of claim 15, further comprising providing a single potentiometer to permit user adjustment of the respective gains of the first and second intermediate signals.

21. A method of adjusting a tonal quality of an audio signal, comprising:

producing a first intermediate signal containing a band of frequencies at a lower mid-range of the audio signal;

producing a second intermediate signal containing a band of frequencies at an upper mid-range of the audio signal;

combining the first intermediate signal, the second intermediate signal and the audio signal to produce a tonally adjusted version of the audio signal; and

adjusting either of the respective gains of the first and second intermediate signals without adjusting the other of the respective gains of the first and second intermediate signals to affect the tonal quality of the audio signal.